

Claims

1. A return-flow-free fuel supply system (1) for an internal combustion engine, in particular of a motor vehicle, having

- at least one fuel pump (8), by means of which fuel can be pumped from a first region (2) of a fuel reservoir into a pressure region (12) communicating with a fuel distributor (18),
- at least one suction jet pump (38), through which fuel pumped through a suction jet pump line (34) by means of the fuel pump (8) flows and through which fuel can be pumped from a second region (4) of the fuel reservoir into the first region (2),
- at least one means (20, 24, 30) that regulate and/or control the pressure in the pressure region (12), and
- at least one check valve (14), by which at least a portion of the pressure region (12) can be blocked off from the fuel pump (8),

characterized in that the means (20, 24, 30) that regulate and/or control the pressure in the pressure region (12) include at least one electrically actuatable magnet valve (40; 44), which is disposed downstream of the check valve (14) in the suction jet pump line (34).

2. The return-flow-free fuel supply system of claim 1, characterized in that the magnet valve (40; 44) is disposed between the check valve (14) and the suction jet pump (38).

3. The return-flow-free fuel supply system of claim 1 or 2, characterized in that the magnet valve (40; 44) is triggered by an electronic engine control unit (24).
4. The return-flow-free fuel supply system of claim 3, characterized in that the triggering of the magnet valve (40; 44) is effected as a function of the pressure measured by an pressure sensor (20) disposed in the pressure region (12).
5. The return-flow-free fuel supply system of one of the foregoing claims, characterized in that an inlet of the magnet valve (40) communicates with the pressure region (12), and an outlet communicates with the suction jet pump (38).
6. The return-flow-free fuel supply system of claim 5, characterized in that the magnet valve (40), during a stopped phase of the engine, is closed when without current and otherwise when with current is open.
7. The return-flow-free fuel supply system of one of claims 1-4, characterized in that the magnet valve is formed by a 2/3-way valve (44), of which an inlet (46) communicates with the pressure region (12), a first outlet (48) communicates with the suction jet pump (38), and a second outlet (50) communicates with a pressure limiting valve (52).
8. The return-flow-free fuel supply system of claim 7, characterized in that the 2/3-way valve (44) is triggered such that in the currentless state, it connects the inlet (46) with the second outlet (50), and in the state with current it connects the inlet (46) with the first outlet (48).

9. The return-flow-free fuel supply system of claim 8, characterized in that the 2/3-way valve (44) is currentless during a stopped phase of the engine and otherwise is supplied with current.

10. The return-flow-free fuel supply system of one of the foregoing claims, characterized in that the pressure region communicating with the fuel distributor (18) is formed by a pressure line (12), which connects the fuel pump (8) with injection valves (16).

11. The return-flow-free fuel supply system of claim 10, characterized in that the suction jet pump line (34) branches off from the pressure line (12) downstream of the check valve (14).

12. The return-flow-free fuel supply system of one of claims 1-3, characterized in that the triggering of the magnet valve (40; 44) is effected as a function of a fuel filling ratio of the second region (4) of the fuel reservoir.

13. The return-flow-free fuel supply system of claim 12, characterized in that the first region of the fuel reservoir is formed by a pot (2) that receives the fuel pump (8) and is disposed inside the second region (4) of the fuel reservoir.

14. The return-flow-free fuel supply system of claim 13, characterized in that the magnet valve (40; 44) is closed when the liquid level in the second region (4) of the fuel reservoir is in a range between maximum filling and a level which is essentially aligned with an upper edge of the pot, and that otherwise it is open.

15. The return-flow-free fuel supply system of one of the foregoing claims, characterized in that the magnet valve (40; 44) is formed by a switching valve, which

is triggered in clocked fashion for regulating the propellant pressure of the suction jet pump (38).

16. The return-flow-free fuel supply system of one of claims 1-3, characterized in that the magnet valve is formed by a proportional valve (40; 44), which is triggered for regulating the propellant pressure of the suction jet pump (38).